Understanding Uncertainty in Process-Based Change Management

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Abstract

This paper aims to understand and characterise the uncertainty that is prevalent in design process-based change management. To complete this investigation, it first assumes that Design Thinking (as a design process that focusses on understanding the problem space) and Systems Engineering (as a design process that focusses on the solution space) are a suitable sample of existing process to generate representation to other process implementations. Through a review of existing literature, this paper identified a total of eleven attributes that could positively or negatively affect the implementation of design process within an organisation. The literature review further identified that an organisations culture can lead to non-uniform perceptions towards attributes to implementation within an organisation, and that this would introduce significant uncertainty within a change project. Using this understanding, the author goes on to propose a solution that aims to measure the identified attributes and key cultural phenomena within an organisation. Suggestions for further work are proposed before conclusions are drawn around the validity of the attributes to implementation and cultural phenomena to process-based change within industry.

Key Terms

Organisational Change, Organisational Culture, Risk, Process Implementation, Design Processes

1.0) Introduction

Undergoing change within an organisation is a multi-faceted challenge that is associated with significant levels of uncertainty. In particular, the human element of change is conceptually complex and often may not be prioritised over the creation of solutions or architecture. This can lead to change being very difficult to plan and execute effectively against tight timeframes. Taking a simplified view, this paper proposes that change is composed of four key aspects, presented in figure 1 below, where the aforementioned human element is represented in part by the term 'attributes to implementation'. Importantly, this framework is methodologically agnostic.

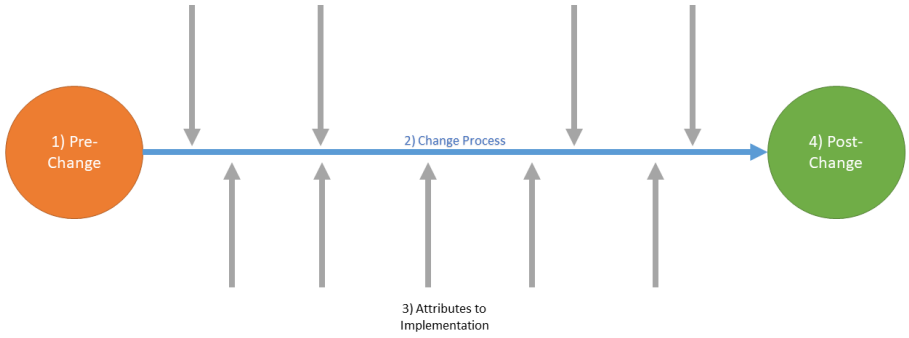


FIGURE 1 - PROPOSED CHANGE MANAGEMENT FRAMEWORK

While there is detailed literature considering the pre-change, change processes and post-change aspects; the concept of attributes to implementation is ill defined (Robertson, 2023) but can significantly impact the overall success of change management projects. This, therefore is an area that requires further research.

In an effort to reduce the scope of this paper, this investigation will focus on process-based change. Process-based change is an important type of change that predominantly, or solely, considers the implementation of new process in order to develop positive organisational outcomes. This is especially important as process is inherently linked to the concept of organisational success, through its contributions to the development of solutions that meet user requirements. Within this subsection, this paper will specifically investigate design processes.

This paper investigates how an organisation's 'attributes to implementation' can be characterised so that process-based change can be understood and planned at an early stage. It is important to note that the attributes to implementation can be barriers or enablers to implementation, as they could positively or negatively affect the change being proposed. The importance here is that they present unknown uncertainty that can affect process-based change.

2.0) Review of Existing Literature

Since there are a significant number of design processes present in literature that could feasibly be implemented within an organisation, this investigation aims to investigate two processes with significantly different focusses to act as a sample of other design process implementations. In particular, one of the selected processes should place an emphasis on understanding the problem space that is present when undergoing design and the other should place a focus on the efficient and structured management of the solution space.

The process selected to consider the problem space was Design Thinking; an analytic and creative process that engages a person in opportunities to experiment, create and prototype models, gather feedback and redesign (Razzouk and Shute, 2012). Design Thinking places humans at the centre of the design process (Brenner, Uebernickel and Abrell, 2016) and introduces a design toolbox that focuses on understanding customer needs before any design or development has been completed.

The process selected to consider the solution space was Systems Engineering; a management-based, holistic, interdisciplinary approach that addresses the entire product lifecycle, including designing and integrating systems to meet consumer demand (Hossain and Jaragat, 2018: p.7). Due to its emphasis on information traceability, systems engineering processes are well designed for complex solution spaces (Tomita et al, 2017).

Within this review of literature, the influences of attributes to implementation will be broken down into two sections. The first will consider the attributes themselves as they are presented in other academic texts, and aim to faithfully contextualise them within with this paper. The second will consider how collectives of perceptions and cultures can sit within organisations, as this will highlight the false applicability of a single solution to all cases of process-based change management.

2.1) Definition of Attributes to Implementation

Considering the change management model presented in figure 1 (page 2), this section will detail the proposed attributes to implementation that are presented in literature and identified through the critical literature review conducted. These are summarised in table 1 and expanded on in each of the proceeding subsections. It is important to note, that the use of Design Thinking and Systems Engineering are as a sample to represent other similar processes and that this understanding can be developed through the inclusion of other process in further work. Where pertinent, these specific design processes will be referenced to give further context to the reader.

TABLE 1 - SUMMARY OF ATTRIBUTES TO IMPLEMENTATION

Attribute	Summary
Education Resources	An organisation's ability to learn new things and the processes that are in place to support this.
Individual Mindsets and Skillsets	The influence of individuality and diversity between and within teams in the division.
Resistance to Change	Resistance to the implementation of new processes, tools and techniques.
Established Design Process	The current design processes for all aspects of an organisation, to include product development.
Implementing Innovation	An organisation's ability to develop innovative solutions and implement them.
Metrics for Success	An organisation's ability to measure the outputs that have been produced accurately.
Organisational Culture	The influence of organisational culture on the processes and outcomes of projects.
Organisational Structure/Hierarchy	The influence of the organisational structure and hierarchy on organisational outcomes.

Communication	How an organisation communicates, both internally and externally.
Remote Design	An organisation's ability to operate when globally distributed.
Organisational Zeitgeist	The overall stability and attitude of an organisation, and its resulting effects on change.

Education Resources

The acceptance of Design Thinking tools may not always be straightforward, as research has shown that simply educating individuals on the tools does not guarantee that they will adopt a tool's implementation (Valentim, Silva and Conte, 2017). For example, some participants may struggle with techniques such as persona and empathy mapping, as they may have difficulty seeing things from another person's viewpoint, while others may find brainstorming and co-creation activities challenging if they are not able to let go of their initial ideas. Additionally, some participants may feel uncomfortable sharing their opinions, which can hinder group interaction. To address these challenges, it is crucial to carefully select design teams or provide ample training for individuals engaged in design activities (Valentim, Silva and Conte, 2017).

Hare et al. (2018) emphasized the importance of presenting Design Thinking methods carefully to participants, so they can see the applications and benefits of each tool within their own working environment. This approach was found to be more effective than offering the entirety of a process at once, as it can lead to a greater uptake of tools and methods by participants; thus resulting in a more successful implementation. This finding is consistent with other literature that suggests the use of case studies to illustrate how processes can be applied to enhance understanding and adoption (Mubin, Novoa and Al Mahmud, 2017).

Individual Mindsets and Skillsets

Carlgren, Elmquist, and Rauth (2016A) suggested that an individual's mindset is crucial in conducting successful Design Thinking work. Literature has explored ways to measure this mindset (Dosi, Rosati, and Vignoli, 2018), and found that research centred approaches could assess and define it; whereby if an individual meets the proposed criteria, they are considered an effective Design Thinking practitioner. The implementation of Design Thinking has been found to positively influence an organization's mindset towards innovation, indicating that an individual's mindset is not fixed (Crisan and Caldarusa, 2017).

Literature also suggests that a lack of prior technical experience and relevant skills required in the Systems Engineering process can lead to project failure (Schmidt et al., 2011). Projects without prior Systems Engineering experience were also observed to fail due to a lack of understanding of the Systems Engineering processes themselves.

Resistance to Change

Crisan and Caldarusa (2017) pointed out that the successful implementation of any new design process can be impeded by resistance to change from individuals who perceive the new process to be inferior to the status quo. Moreover, the implementation of new design processes often encounters a lack of support from organisations, particularly from management and disciplines that do not see the value in the change being enacted (Armstrong, 2000).

Rafferty and Griffin (2006) distinguished between two types of change: transformational and incremental. Transformational change involves changes to the fundamental components of an organization, such as ways of working, values, structure, and strategy, and is viewed as a threat by individuals who must adopt new values and ways of working. The second type of change, incremental change, is relevant for any change that does not affect core organizational components. Implementing

process is likely to be a transformational change for an organisation, unless the organization already integrates similar methodologies into its existing processes.

Heyden et al. (2016) reported several characteristics that can influence recipient perceptions and support towards proposed change, including providing accurate information to reduce uncertainty (Sharma and Good, 2013), involving individuals in the change process and giving them control (Greenberger and Strasser, 1986), and instilling confidence in individuals that the organization can successfully implement change (Griffin, 2007).

Established Design Process

Design Thinking methodologies may be integrated into other design processes in order to produce innovative outcomes while still maintaining metrics such as efficiency and time to market. However, Carlgren, Elmquist, and Rauth (2016A) found that such an approach is often perceived as resource-intensive and challenging to prioritize, particularly in organizations with heavy workloads. One of the interviewees from this study noted that when deadlines were tight and failure was not an option, the resulting solutions were likely to be less innovative. According to interviews with middle management, resources were often not allocated to Design Thinking activities, as these were viewed as additional, non-essential costs. Conversely, in instances where Design Thinking had been implemented as a standalone design process, there was reportedly a gap between the design concepts generated by the Design Thinking team and the product's technical feasibility and manufacturability. This was attributed to the Design Thinking team's failure to balance innovation and technical feasibility during the product development process, resulting in unsatisfactory outcomes.

Implementing Innovation

In some cases, organizations may recognize the value of innovative design but still fail to effectively utilize it. This can be a major challenge when implementing Design Thinking in organisations, as the concepts and themes identified may not be feasible to actually be created or manufactured, rendering them unsuitable for adoption (Carlgren, Elmquist and Rauth, 2016A).

In contrast, Systems Engineering places a strong emphasis on risk management (Orlowski et al, 2015) which in theory would propose that it would be significantly simpler to implement. As an aside, this also suggests that the incorporation of Systems Engineering principles into a Design Thinking process may help to mitigate this issue and make it easier to implement Design Thinking solutions.

Metrics for Success

Mabogunje, Sonkalar, and Leifer (2016) noted that improving design in a systematic and iterative manner is hindered by the lack of measurable metrics. Economic metrics are often used to measure engineering design, but they do not reflect the intellectual activities involved in the actual design process. Unlike other engineering fields, design and design development lack standardized measurement figures. However, there are potential metrics that could be utilized to measure the effectiveness of Design Thinking, as proposed by Rapp and Stroup (2016). These include:

- Customer feedback, which can be obtained through testimonials to evaluate the impact of Design Thinking on an organization's customers.
- Frequency and attendance of Design Thinking activities to measure acceptance and the value that employees place on Design Thinking processes.
- The immediate impact of Design Thinking, which can be recorded through projects or project aspects implemented as a result of Design Thinking activities.
- Traditional KPIs such as financial performance, market success, and revenue to compare projects that utilized Design Thinking with those that did not.
- Reflective measurements such as questionnaires and surveys completed by Design Thinking process participants to identify their perceptions of the process and its outcomes.

- Working culture within an organization to measure team motivation, collaboration, and engagement in developing an innovative and collaborative company culture.

In comparison, Systems Engineering utilises metrics such as measuring requirement stability, defect density, and project parameters through Systems Engineering documentation published by Antony et al (2010), Kasser and Schermerhorn (1994), Sheard (2000), Chaves (2016), and Orlowski et al (2015). However, organizations must be willing to accept these metrics alongside traditional metrics such as time to market and overall project cost for a successful long-term implementation of any design process. The lack of suitable metrics for design and design development is a significant barrier to some implementations of process.

Organisational Culture

In organisations, the reduction of risk in a project is typically considered important to ensure successful outcomes (Huber and Rothstein, 2013). This contrasts with the principles of Design Thinking, which advocate for learning from mistakes and taking risks to improve the design of a product or service (Dosi, Rosati and Vignoli, 2018). Additionally, Carlgren, Elmquist and Rauth (2016A) found that employees often perceive Design Thinking as less serious than traditional design approaches, and view aspects of the process as "unnecessary nonsense." In some cases, project teams are prohibited from engaging with end users due to concerns about leaking sensitive information, which hinders Design Thinking's human centred approach.

Organisational Structure/Hierarchy

Introducing new design processes in an organization can impact its structure and the responsibilities of each individual. According to Carlgren, Elmquist and Rauth (2016A), who conducted interviews with several organizations that had implemented Design Thinking for over five years, some employees in the product development process felt threatened by the introduction of Design Thinking as they perceived it as a challenge to the capabilities of established groups and team members. Moreover, the decision-making process was perceived to shift from management down to a team level, leading to power shifts and reduced management authority. Finally, Raharjo and Eriksson (2015) found that leadership plays a significant role in human resource development, information and analysis, process management and implementation, and strategic planning.

Communication

Establishing an effective communication system within an organization is crucial for successful implementation of design process. However, literature suggests that in some cases, organizations face a fundamental communication barrier where they are unwilling to accept outputs in materials other than that which they are familiar with (Carlgren, Elmquist and Rauth, 2016A). This breakdown in communication between the design team and management can occur when there is no proposed project outcome, making it difficult for management to understand how to support the project or allocate resources without risking failure due to a perceived lack of clarity. Therefore, the challenge lies in presenting an idea based on, sometimes, subjective data and user-centered values in a manner that is accepted and understood by relevant internal stakeholders.

Effective communication processes have been recognized as critical in Systems Engineering by Kasser and Schermerhorn (1994), who identified poor communication as a primary reason for almost any type of failure. Thus, an organization's internal communication strength is a crucial attribute to consider when implementing Systems Engineering. If the communication process is inadequate, then it is unlikely that Systems Engineering implementation will have a significant effect on project outcomes, making it seem unnecessary.

Remote Design

The attribute remote design considers individuals that collaborate on design projects in geographically different locations. Haramundanis (2008) identified that user-centered design was feasible in organisations, provided they had a knowledgeable team, planned meeting structure, sufficient time, open and reliable communication, and reasonable working schedules across time zones. However, this suggests that any of these factors could be essential to the success or failure of design processes remotely.

Studies have also explored the use of design processes in remote versus co-located settings at CERN (Ultriainen, 2017). The findings reveal that while remote design is feasible, every task was reported to be easier when done in person. This perception was due to various factors, including low-quality internet connections between participants, working across different time zones, the perceived need for team consensus in remote decision-making, and the challenge of knowing when to stop discussing and start taking action. Since virtual environments have the potential to be faster, cheaper, and smarter (Furst, Blackburn, and Rosen, 1999), this issue is likely to be significant and should be considered in future work on the implementation of design processes.

Organisational Zeitgeist

Robertson (2023) identified that the implementation of process is influenced not only by the design process itself, but also by significant internal and external variables, such as a period of redundancy, global pandemics, other change management activities, or recent bonus and promotion schemes. This attribute proposes that the overall stability and attitude of an organization can either facilitate or hinder efforts to enact change.

2.2) Abstracting Culture

Prajogo and McDermott (2005) suggest that organizational culture affects the success of process implementation rather than the other way around. This implies that understanding an organization's culture is critical in understanding the uncertainty present in change, and to managing and delivering process implementations. In this paper considerations around culture will be split into unitarism, pluralism and radicalism; and uncertainty versus certainty.

Cultural Unitarism, Pluralism and Radicalism

According to Fox (1966) and Fox (1976), there are three possible but distinct cultural silos within organizations: unitarist, pluralist, and radicalist. In a unitarist organization, all team members share the same culture and work together towards the same goal, akin to 'pulling in the same direction.' This leads to harmony, cooperation, effective leadership, high performance towards a common purpose, and team spirit that fosters healthy productivity (Fox, 1976). This is shown in figure 2.

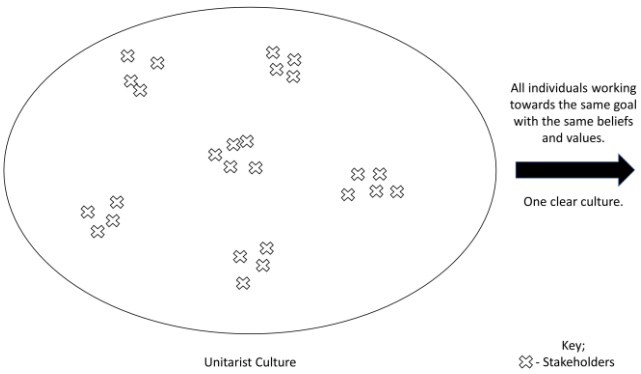


FIGURE 2 - REPRESENTATION OF A UNITARIST CULTURE (ROBERTSON, 2023)

In contrast, a pluralist organisation consists of multiple differing sub-cultures that operate independently of each other in an attempt to achieve what each sub-culture considers to be valuable. These are often driven towards organisational goals by one overarching culture. Importantly, the sub-cultures can contradict, compete or support one another depending on the facet of culture being considered. These differences are significant when working together to achieve organisational goals. This is shown in figure 3.

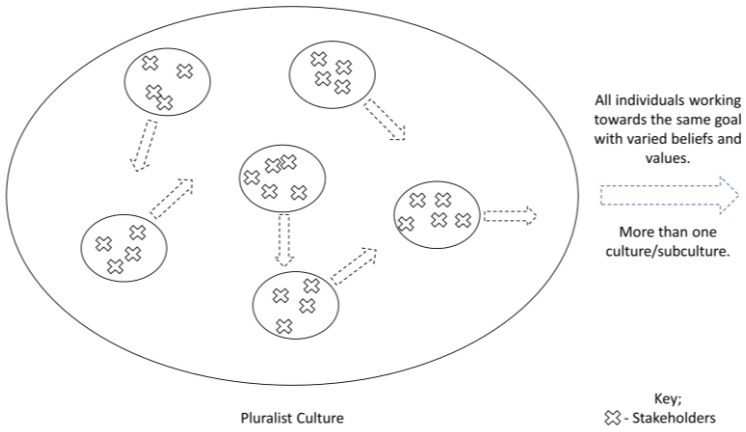


FIGURE 3 - REPRESENTATION OF A PLURALIST CULTURE (ROBERTSON, 2023)

Finally, a radicalist organization is characterized by two opposing classes: a high-paid, low-work managerial role that gives orders, and a low-paid, high-work group of 'order-obeyers.' Both sides believe that a gain for one side means a loss for the other, leading to fully opposed interests, pull occurring in opposite directions, and continuous friction and distrust, ultimately resulting in poor organizational performance. This is shown in figure 4.

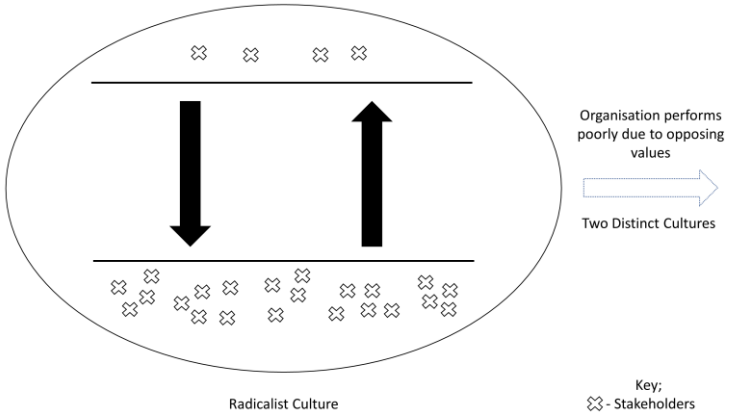


FIGURE 4 - REPRESENTATION OF A RADICALIST CULTURE (ROBERTSON, 2023)

Kaufman et al. (2020) proposed that organizational cultures can be identified using a Relational Quality Index (RQI), where a low value can indicate a radical culture, and a high value can indicate a unitarist culture. The literature identified several variables that begin to characterize high and low RQI cultures. A high RQI value (or cultural unitarism) is associated with positive management styles, workplace justice, and above-average wages and benefits, whereas a low RQI value (or cultural radicalism) is linked to poor perceptions of trust between senior and junior employees, tightly constrained and uninteresting roles, and significant organizational disruption.

Cultural Uncertainty versus Certainty

Crosby (1979) proposed a different perspective to understanding culture and its effects on process implementation. In this model, organisations are proposed to be placed on a scale from poor process quality to strong process quality as this aids in the explanation of employees perceptions towards processes.

For instance, poor process quality on the process quality scale is referred to as uncertainty, where management lacks strategic knowledge of quality and views the inspection of finished products as the only means of achieving quality. In an uncertainty environment, heroes emerge due to the absence of processes or metrics. These heroes are key individuals who can work within a relatively unstructured process and are critical for the success and completion of product development. Organisational uncertainty is characterized by poor process quality and a lack of metrics, with aforementioned heroes conducting projects as they see fit to achieve project goals (Crosby, 1979).

At the opposite end of the proposed scale is strong process quality, where management structures are confident that process quality is sufficient and understands why this is the case. Furthermore individuals rely on process, meaning that the requirement for organisational heroes is not established and they are not found within the organisation. In the case of absolute certainty, Crosby (1979) proposed that research-oriented individuals can be found in an organization, whose role is to devote time to incrementally improving the established process without creating any detrimental side effects.

FIGURE 5 - CERTAINTY AND UNCERTAINTY CULTURES

In the case of process implementation, Prajogo and McDermott (2005) proposed that change can be viewed from either a unitarist or a pluralist perspective. The unitarist perspective sees process implementation as a fixed set of practices or activities that can only be applied within a specific cultural type, and practices are recommended to be adopted as a whole rather than selected as parts. In contrast, the pluralist perspective acknowledges multidimensional cultures and proposes that process implementation must be aware of its own limitations when engaging between them and adapt accordingly to ensure that the proposed implementation is suitable for the culture it will be engaged with.

3.0) Proposed Solution

Having developed a more detailed level of understanding of what literature proposes the attributes to implementation to be, this section will provide an overview of one potential method and series of outcomes that could be developed using this framework. This solution would provide change management practitioners with a rapid means to assess the attributes to implementation, identification of unitarist, pluralist and radicalist cultures, and identification of a certainty or uncertainty culture. This understanding could then be used as a part of the change management process to understand how people within the organisation might react to process-based change and plan mitigations accordingly. This has been named the Organisational Characteristics Assessment (OCA).

The main aims of this solution are to;

- Rapidly develop an understanding of the attributes to implementation and cultural phenomena proposed in this paper from minimal existing knowledge.
- Provide a repeatable structure that change practitioners can follow iteratively or in parallel.
- Effectively and accurately present findings on an organisation's attributes to implementation and cultural phenomena.

3.1) OCA Methodology

Acknowledging that one of the core aims of this proposed solution is to rapidly develop an understanding from minimal knowledge; this method aims to deliver its initial insights at pace but allow for later iteration and feedback based on further examination. It is important to note that timeliness to generate initial insights can be affected by the initial sample size and methods of data capture selected. An outline of how this might work is presented in figure 6.

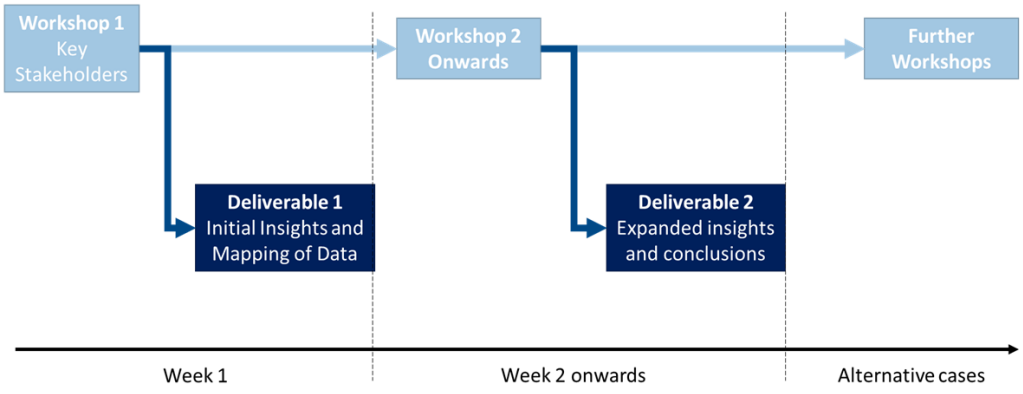


FIGURE 6 - PROPOSAL FOR A RAPID DATA COLLECTION TIMELINE

When collecting data, it is important to split this solution into a quantitative and a qualitative element. The quantitative element is aiming to generate an understanding of individual's perceptions towards proposed change through a rating of the attributes to implementation. If completed in front of peers as a part of a workshop or seminar, responses should be hidden until data from all participants has been collected to avoid the introduction of bias; especially as this would present significant skew when identifying unitarism, pluralism or radicalism. The qualitative assessment is aiming to generate insights into why participants might have the perception that they do, or what may be their key drivers for rating an attribute positively or negatively. These are especially key when aiming to understand how change can be affected by any uncertainty present within an organisation, as participants perceptions as to how positive or negative a given solution might be will affect their choice to implement it in their normal ways of working. An example of how this could be constructed is presented in figure 7.

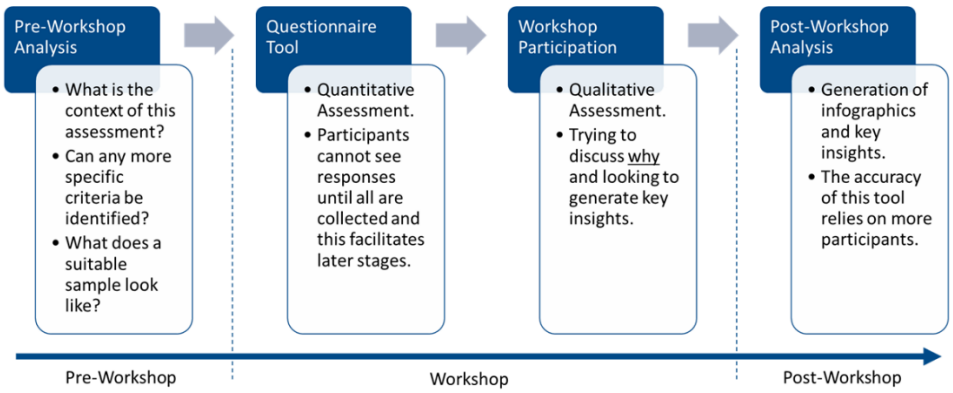


FIGURE 7 - PROPOSAL FOR WORKSHOP STRUCTURE

3.2) OCA Outcomes

The outcomes of the OCA are proposed in this paper to reflect directly on the attributes to implementation and key cultural phenomena that were identified in literature, and through the work of Robertson (2023). Again, this section will be split into two components that each focus on a specific aspect of this understanding.

The first component (henceforth Deliverable A) will focus on the concepts of cultural unitarism, pluralism and radicalism; and uncertainty against certainty as defined in the literature review. Deliverable A will present a qualitative overview of these criteria through the summation of the work that was completed as a part of the solution method.

In the case of unitarism, pluralism and radicalism; these can be identified through the quantitative data gathered as the construction of box and whisker diagrams in the latter component of the OCA outcomes (henceforth Deliverable B) should present an argument as to whether individuals within the organisation have significantly differing opinions on a subject. For example, if the upper quartile is significantly positive and the lower quartile is significantly negative, then this would indicate cultural pluralism or radicalism, whereas if both quartiles were relatively close together, this would indicate cultural unitarism. The distinction between pluralism and radicalism in this case would stem from whether insights within Deliverable B propose significant differences between levels of seniority. The identification of certainty versus uncertainty can more simply be identified through the examination of insights that relate to the use, suitability and adherence to an organisation's processes. Deliverable A is proposed to be presented as is shown in figure 8.

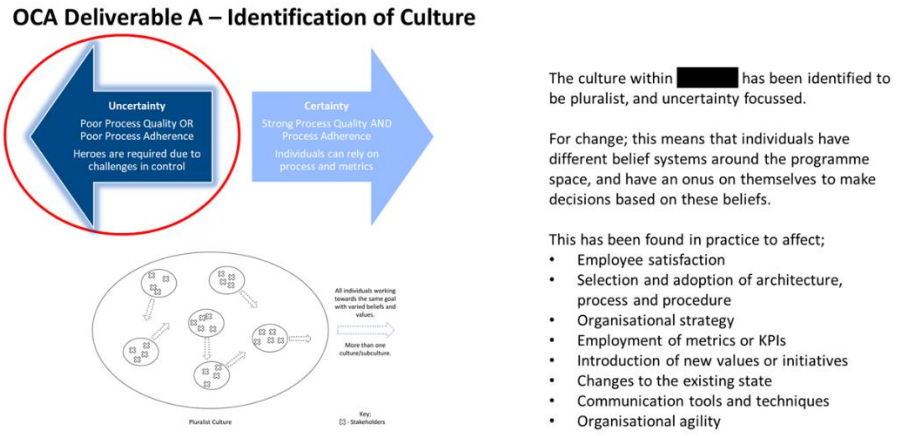
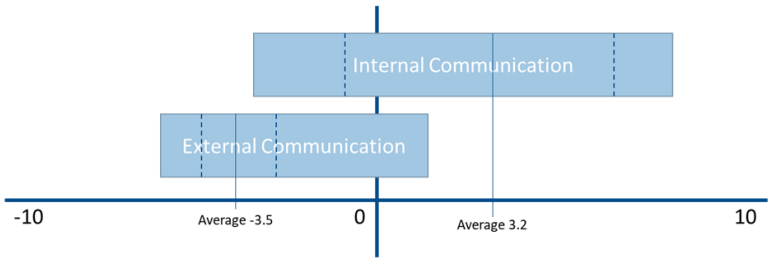


FIGURE 8 – EXAMPLE FORMAT AND CONTENT OF DELIVERABLE A

Deliverable B reflects directly on each of the identified and tested attributes to implementation. Each section will use the quantitative data gathered to draw a box and whisker plot. This plot will outline graphically what the perception of the selected sample is with regards to each attribute to implementation and highlight how these might be perceived if they are affected as a part of a proposed process change. This will also be supported with key insights from the qualitative data that will highlight why particular perceptions are found, and further contextualise change. It is important to note that the plots produced will also be used to inform aspects of Deliverable A. An example of this is presented in figure 9.

OCA Deliverable B Onwards – Influence of Attributes to Implementation



Key Insights related to communication are;
- Internal communication is perceived positively due to X.
- External communication is perceived negatively due to Y.
- The variance/standard deviation in these values is significant because of cultural phenomenon Z.

We should be aware of the following issues in our change programme;
- Opportunity: We could resolve X and this would lead to greater buy in at Y.

FIGURE 9 - EXAMPLE FORMAT AND CONTENT OF DELIVERABLE B

3.3) Future Work

The proposed OCA is one potential method for understanding the attributes to implementation and cultural phenomena that are present within an organisation and their effects on process-based change management so that change can be suitably de-risked before its conception. However, there are many other means to achieve this, and these are being considered and developed over time in further work.

One interesting next step considers the wider applicability of this OCA against other aspects of the change environment. For example, the attributes to implementation raised in this literature review are applicable only to the process space but there are likely similar attributes that are critical when considering procedural change through to enterprise change. Therefore further investigation should be conducted to identify what these might be and understand whether similar OCA models can be determined for each of these constructs. These can be viewed in figure 10.

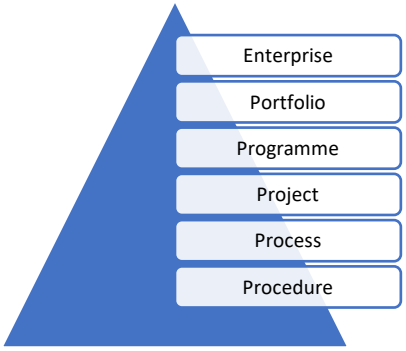


FIGURE 10 - PROPOSED NEXT STEP TO UNDERSTAND OCA MODEL ACROSS DIFFERING LEVELS

4.0) Conclusions

This paper set out to understand how uncertainty within process-based change management could be captured and understood, in order to de-risk change and support its timely conclusion. To ensure representation across process, this investigation considered one user centred design process (Design Thinking) and one solution centred design process (Systems Engineering) as its sample.

First, and utilising the change management framework proposed in figure 1 (page 2), this investigation conducted a review of the existing and established literature to identify the proposed attributes to implementation for process-based change. This review identified a total of 11 attributes that could affect the implementation of process within an organisation. These were;

- Education Resources
- Individual Mindsets and Skillsets
- Resistance to Change
- Established Design Process
- Implementing Innovation
- Metrics for Success
- Organisational Culture
- Organisational Structure/Hierarchy
- Communication
- Remote Design
- Organisational Zeitgeist

When considering the literature around the attributes to implementation however it became apparent that considerations needed to be made for specific cultural phenomena that reflected on the presence and spread of culture within an organisation. This paper therefore considered the work of Fox (1976), and Crosby (1979). Fox (1976) proposed the concepts of unitarism, pluralism and radicalism; which capture the potential non-uniformity of culture and perceptions within an organisation. Crosby (1979) considered concepts of certainty and uncertainty cultures, and proposed that an organisation's process quality and adherence to process are vital within the implementation of future process-based change.

This paper went on to propose a novel solution to understanding the uncertainty in change management based on the understanding presented in literature. This solution is proposed to develop a rapid and representative understanding of how the organisational characteristics proposed in this paper would affect the implementation of process. From this, change management activities and mitigations can be developed. Potential additional effects that could be found from using this methodology include an increase in participants feelings of involvement within a particular change, the perception that participants are being listened to and increased overall buy in.

Future work in this field include: assessing the applicability of the proposed OCA model within different industries; exploring the expansion of this model up to project, programme, portfolio and enterprise; and the development of understanding around the attributes to implementation through the inclusion of additional design processes.

5.0) References

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